



U.S. Navy Unexploded Ordnance Cleanup

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Pacific Division Naval Facilities Engineering Command



Overview

- Background
- Definitions
- DoD/Regulatory Roles
- UXO Technologies
- UXO Working Group
- Navy UXO Quality Assessment Program
- Summary
- Points of Contact

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Unexploded Ordnance (UXO)



- 15 Million Acres/
1,500 Sites in U.S.
- \$100 – \$400 Billion to
Address U.S. Clearance
Needs

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Before We Begin...

- UXO is a subset of OE as shown here:



Range Definition Chart

DoD Range Definition	Active/Inactive	CTT
Governing Regulations	RCRA	CERCLA
Funding	O&M	ER, N, BRAC...
Environmental Oversight	Compliance	Cleanup

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 - Explosive Safety Oversight
 - Current Issues
- UXO Technologies
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Explosive Safety Oversight

■ NOSSA

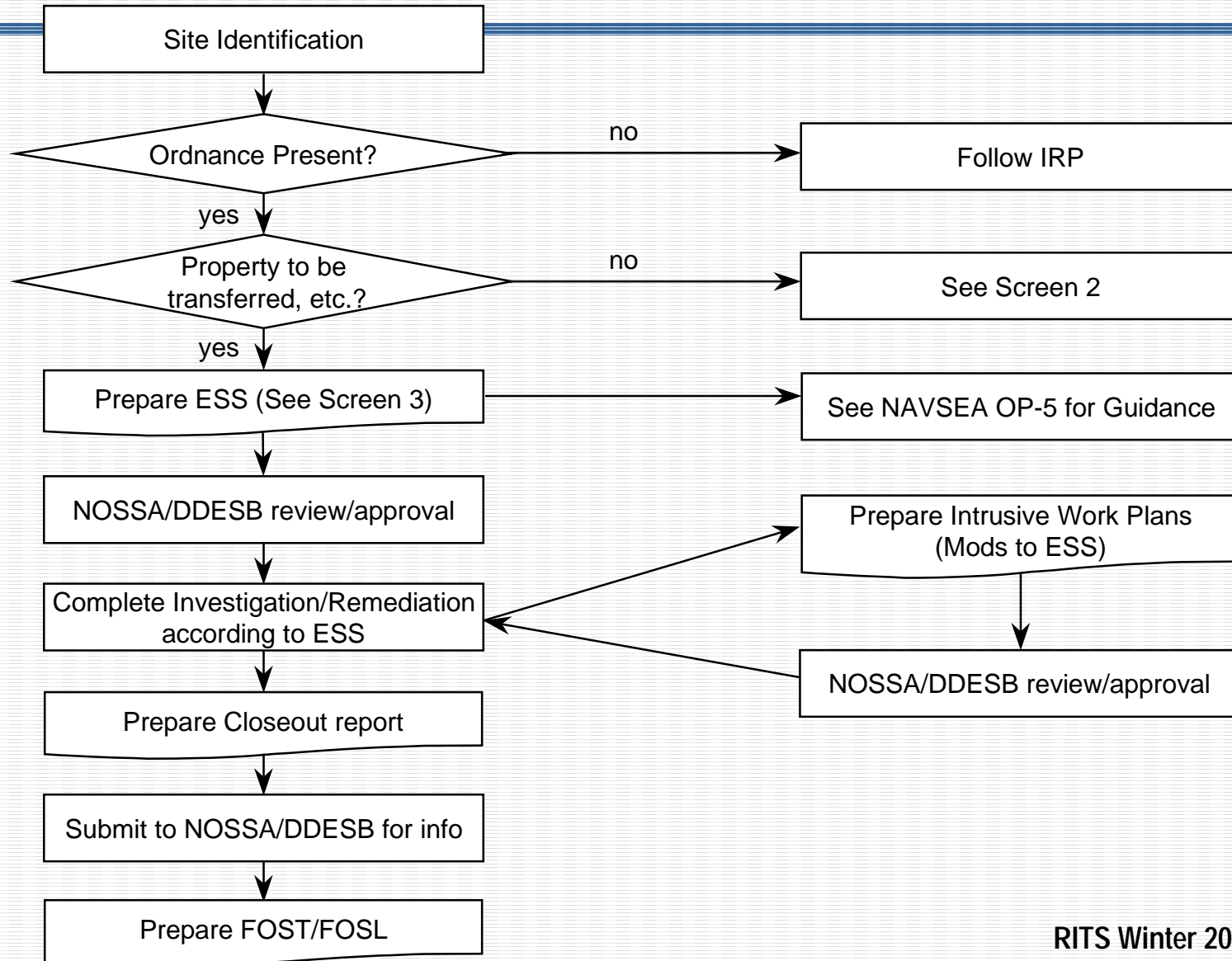
- Explosive Safety Submission: For transferring/leasing property
 - See NAVSEA OP 5 for requirements
- Should also submit work plans for intrusive work for investigations required for these properties to NOSSA
- Site Approval: For construction of facilities handling OE, go to NOSSA
 - See NAVSEA OP 5 and NAVFACINST 11010.44 for requirements

Explosive Safety Oversight

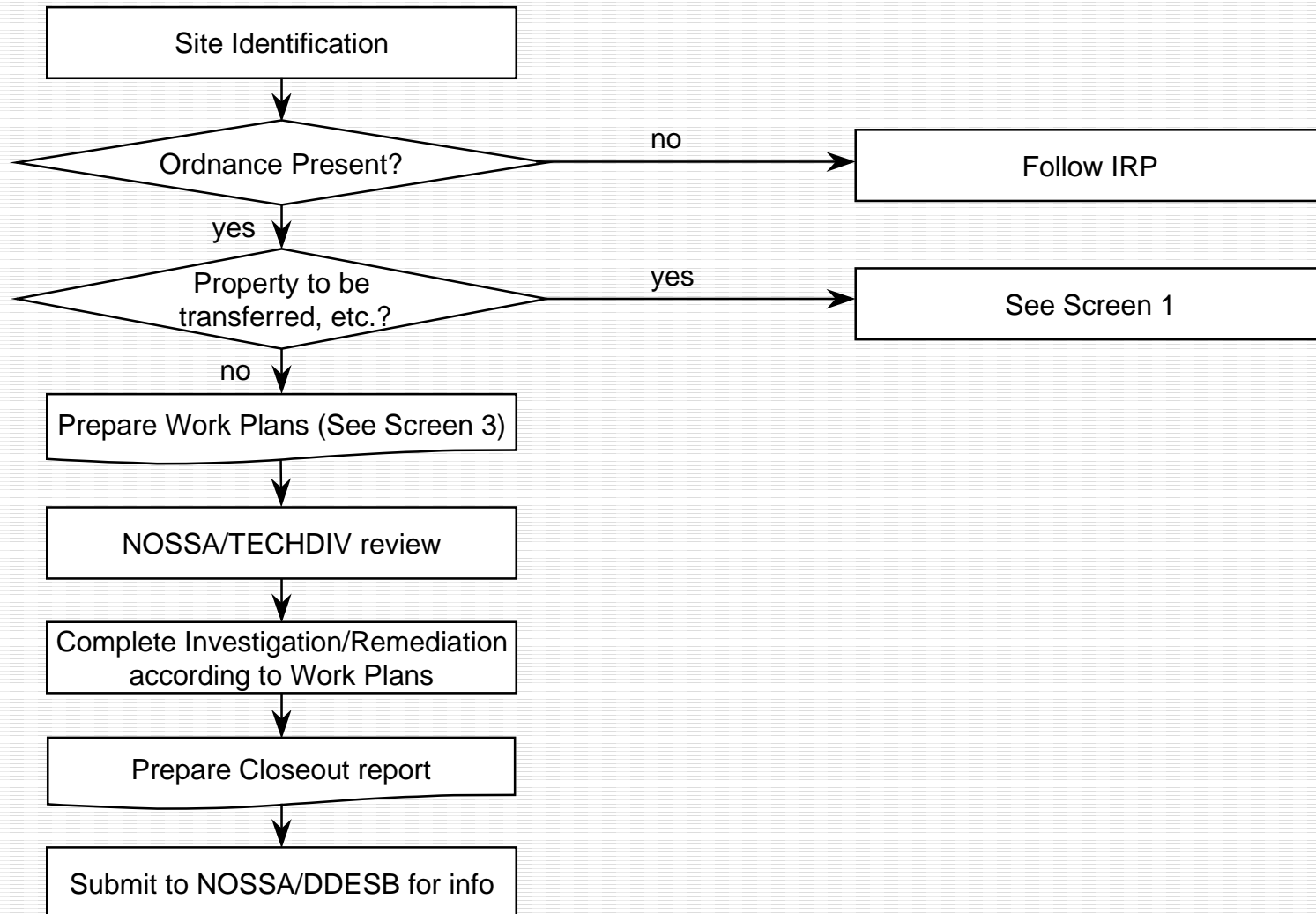
■ DDESB

- DoD Directive 6055.9 states in Section 5.4.12 that the Secretaries of Military Departments shall: "Submit to the DDESB plans for the removal of unexploded ordnance or explosives when land known or suspected to contain such items is considered for the lease, transfer outside of the Department of Defense, or disposal."

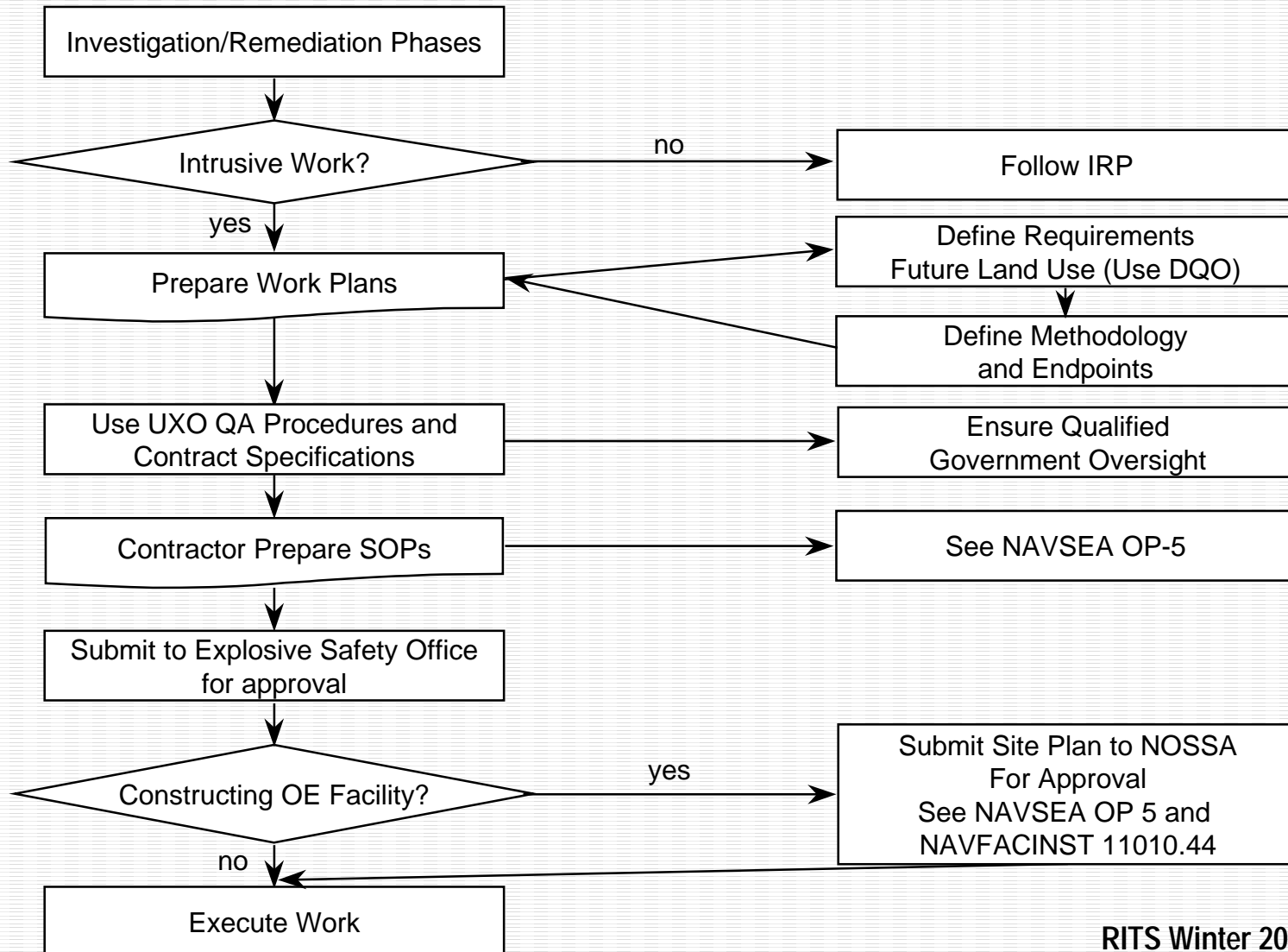
Site Approval/Review Process Screen 1



Site Approval/Review Process Screen 2: Property to stay under control of Navy



Site Approval/Review Process Screen 3: Intrusive/OE Site Work



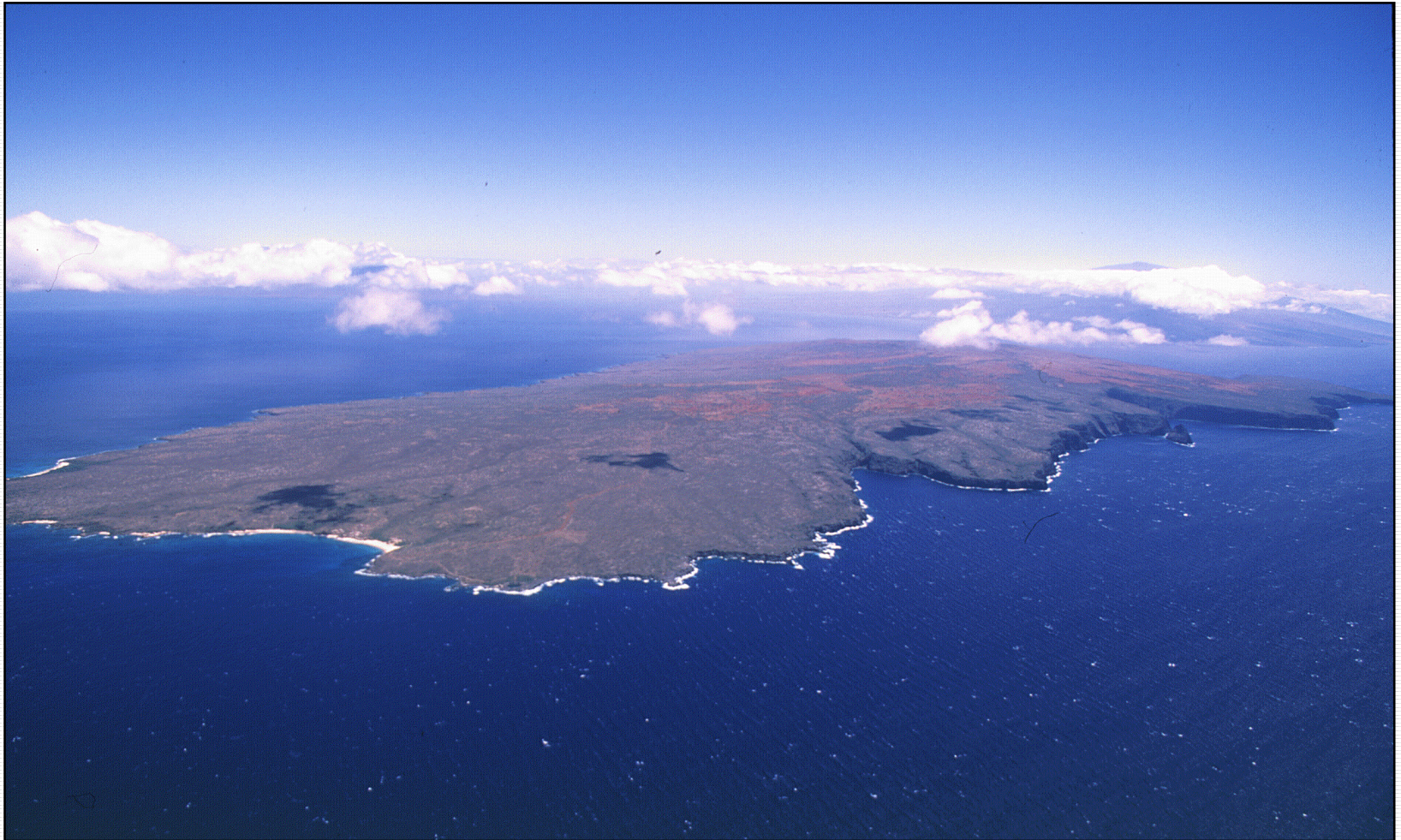
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- UXO Technologies
 - Detection Methods
 - Description
 - Site Examples
 - Removal Technologies
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UXO Projects

- | | | |
|--|--|-------------------------------|
| <ul style="list-style-type: none">■ Kaho'olawe Island, HI■ Mare Island Naval Shipyard, CA■ Pearl Harbor Channel, HI■ Naval Air Facility, Adak, AK | | Detection
Examples |
| <ul style="list-style-type: none">■ Naval Air Station, New Orleans, LA■ Ikego Pond, Yukusuka, Japan■ Camp Hansen & Schwab, Okinawa■ Coral Sea Coral Pit, HI | | |

Kaho'olawe Island



Kaho'olawe Island



Kaho'olawe Island



Kaho'olawe Island



Kaho'olawe Island



Kaho'olawe Island Ordnance Display

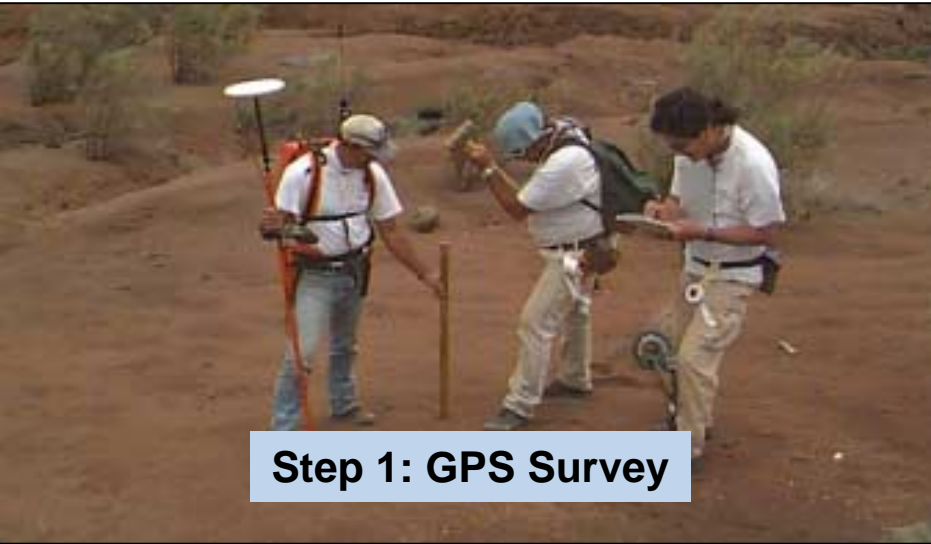
Kaho'olawe Island



Electromagnetic Detector for Rough Terrain

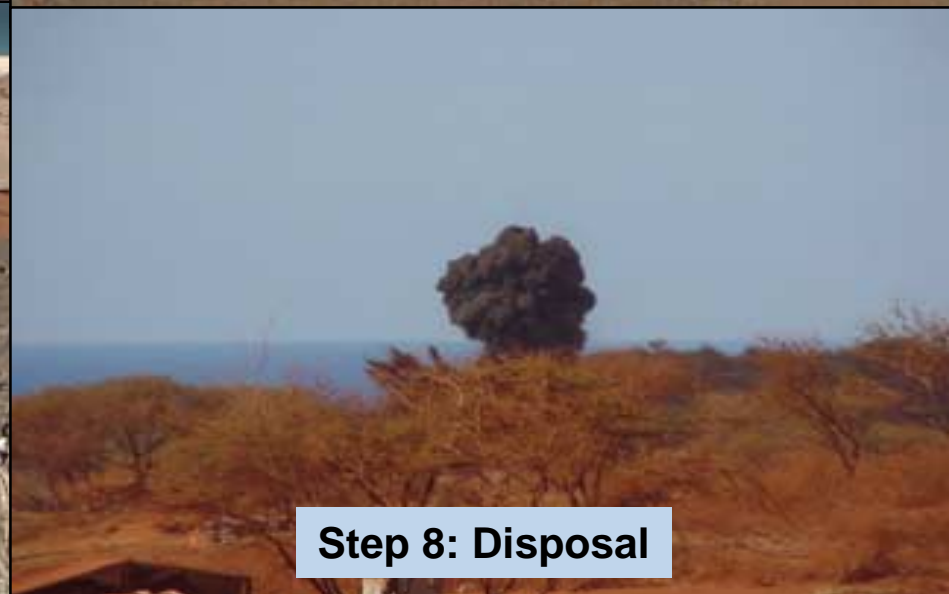
Electromagnetic Detector

Kaho'olawe Island



Electromagnetic Detector

Kaho'olawe Island



Kaho'olawe Island



Bip of a 500-Lb Bomb near the Base Camp

Mare Island Naval Shipyard

- Investigations and Response Action for Sites Containing UXO
- 230 Acres Underwater
- 20 Acres Shoreside



Mare Island Naval Shipyard



Mare Island Naval Shipyard

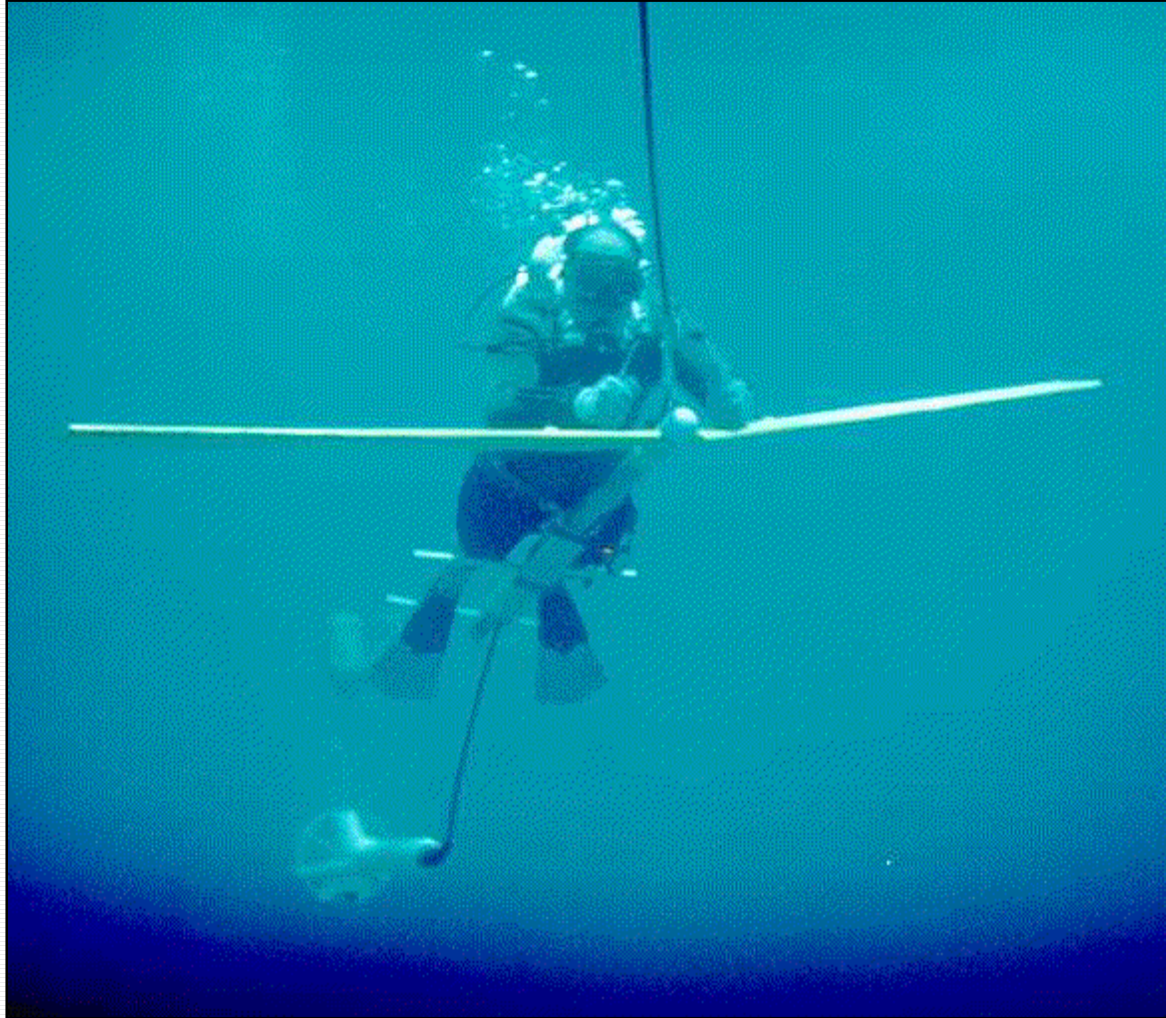


Pearl Harbor Channel

Sewer Outfall Extension, Ft. Kamehameha, Pearl Harbor, HI



Pearl Harbor Channel



Towed Magnetometer

Pearl Harbor Channel



Six-Inch Shell

Pearl Harbor Channel



Shells removed from Channel

Evaluating Commercial Detection Equipment

NAF Adak



NAF Adak



Evaluating Commercial Detection Equipment

NAF Adak



Evaluating Commercial Detection Equipment

NAF Adak



Evaluating Commercial Detection Equipment

NAF Adak



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NAS New Orleans



NAS New Orleans



NAS New Orleans



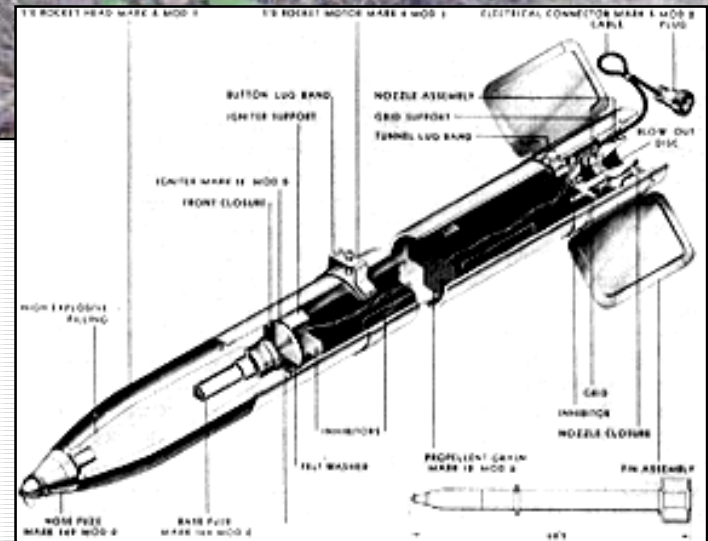
NAS New Orleans



Coral Sea Coral Pit, HI



Coral Sea Coral Pit, HI



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UXO Working Group

- Established Spring 2000
- Quarterly Meetings
- Participants
 - All EFDs/EFAs
 - NAVFAC
 - CNO
 - NFESC
 - EODTECHDIV
 - CECOS

Navy UXO Response Contract (NURC)

- Investigate for UXO
- Identify UXO
- Remove/Detonate UXO
- Address Chemical Contamination
- \$50M Capacity
- Cost Plus Award Fee
- 4 Option Years
- Awarded July 1999
- Worldwide

UXO Working Group Goals

- Develop NAVFAC-Wide UXO Guidance
- Produce a QA Guide
- Design and Implement UXO Training
- Standardize UXO Contract Language
- Promote the use of Innovative Technologies
- Enhance Navy's Capabilities in UXO Field

UXO Working Group

- Detection and Threshold Levels
 - EODTECH DIV Presentation
 - Development Technologies
 - System Deployment
- Effects of Underwater UXO and BIPs
 - NFESC Lead
- Parametric Risk Assessments
 - EFA WEST
 - Mare Island Naval Shipyard

UXO Working Group

- Training
 - Modularize
 - Include Safety Awareness
 - Incorporate Existing Courses
- Standardizing Contracts
 - Guide Specification for Construction Contracts when UXO Suspected
 - Detailed Specifications for Detailed UXO Investigations and Cleanups

UXO Working Group

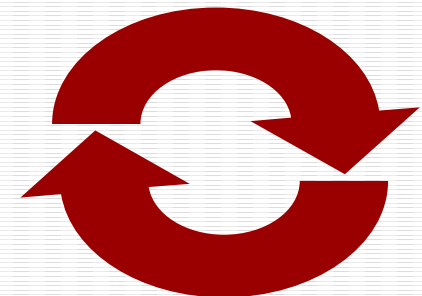
- Draft Quality Assurance Program Plan Issued
 - Awaiting Comments
- Site Approval and Property Transfer Review
 - Construction

UXO Working Group Web Page

- <https://pacinfo.efdpac.navfac.navy.mil/uxo>
 - Charter
 - Meeting Minutes
 - DoD References
 - Navy References
 - UXO Organization

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- Overview of the QA Approach
 - UXO Quality Systems Drivers
 - Basis for the UXO QA System and its Relationship to CERCLA
 - UXO QA Components and the Implementation Cycle
 - Plans for the Future



Quality System Drivers

- Keep explosives safety first
- Capture quantifiable data to:
 - Qualify plans & processes for execution
 - Measure cleanup contractor performance & contract specification compliance
 - Support post clearance certification for use
 - Minimize risk & liability after site turnover
 - Support public/stakeholder confidence by providing measurable evidence of cleanup
 - Identify lessons learned
- Data: Repeatable, reusable and verifiable

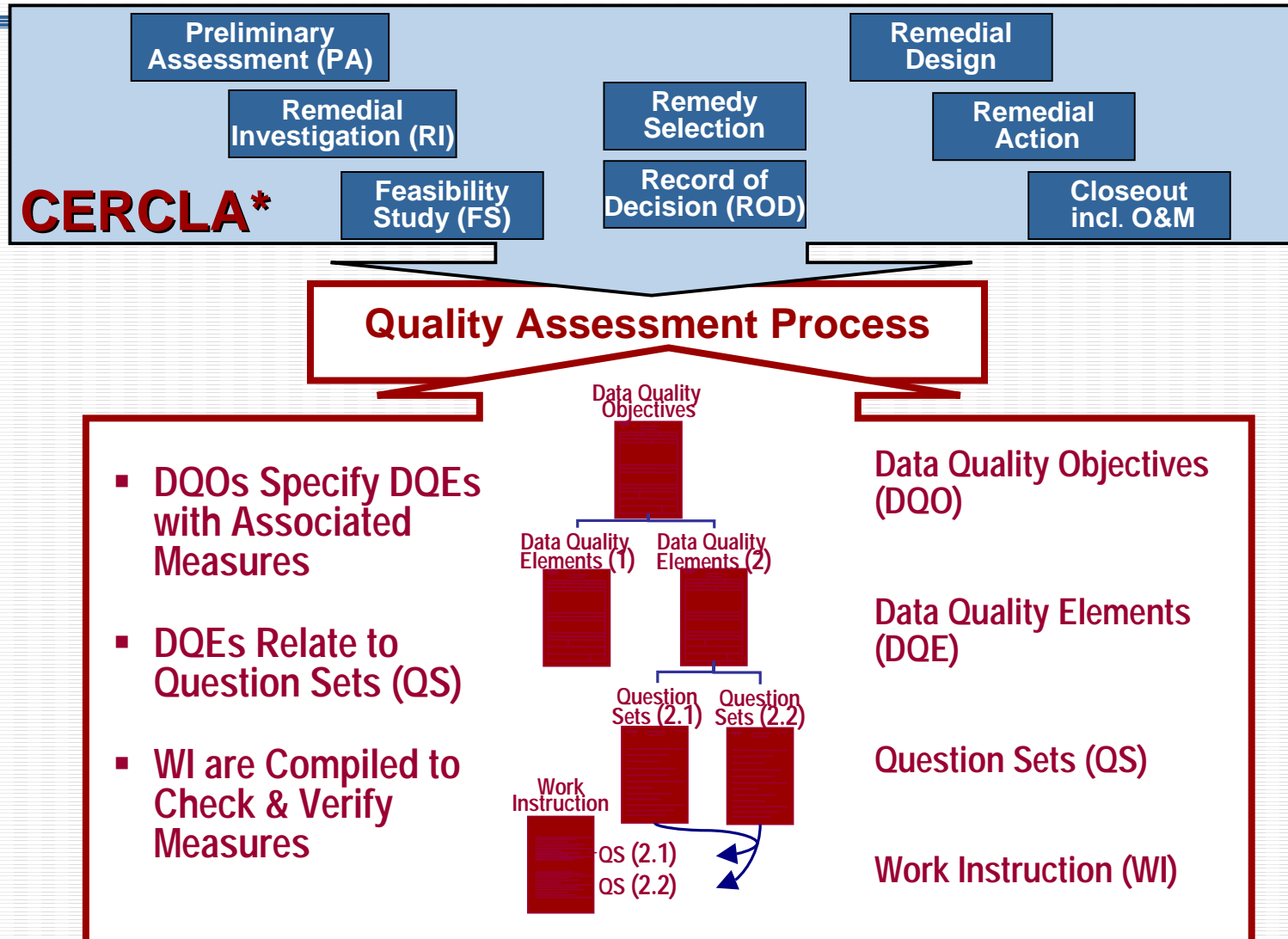


Today Overview

- UXO QA system development is occurring in an evolutionary environment
- QA system currently addresses:
 - PA & RI: first two phases of CERCLA
 - Portions of later CERCLA Phases
- Validation testing: ongoing
- Anticipate addressing all facets of UXO clearance, structured to parallel CERCLA



Program Relationship to CERCLA

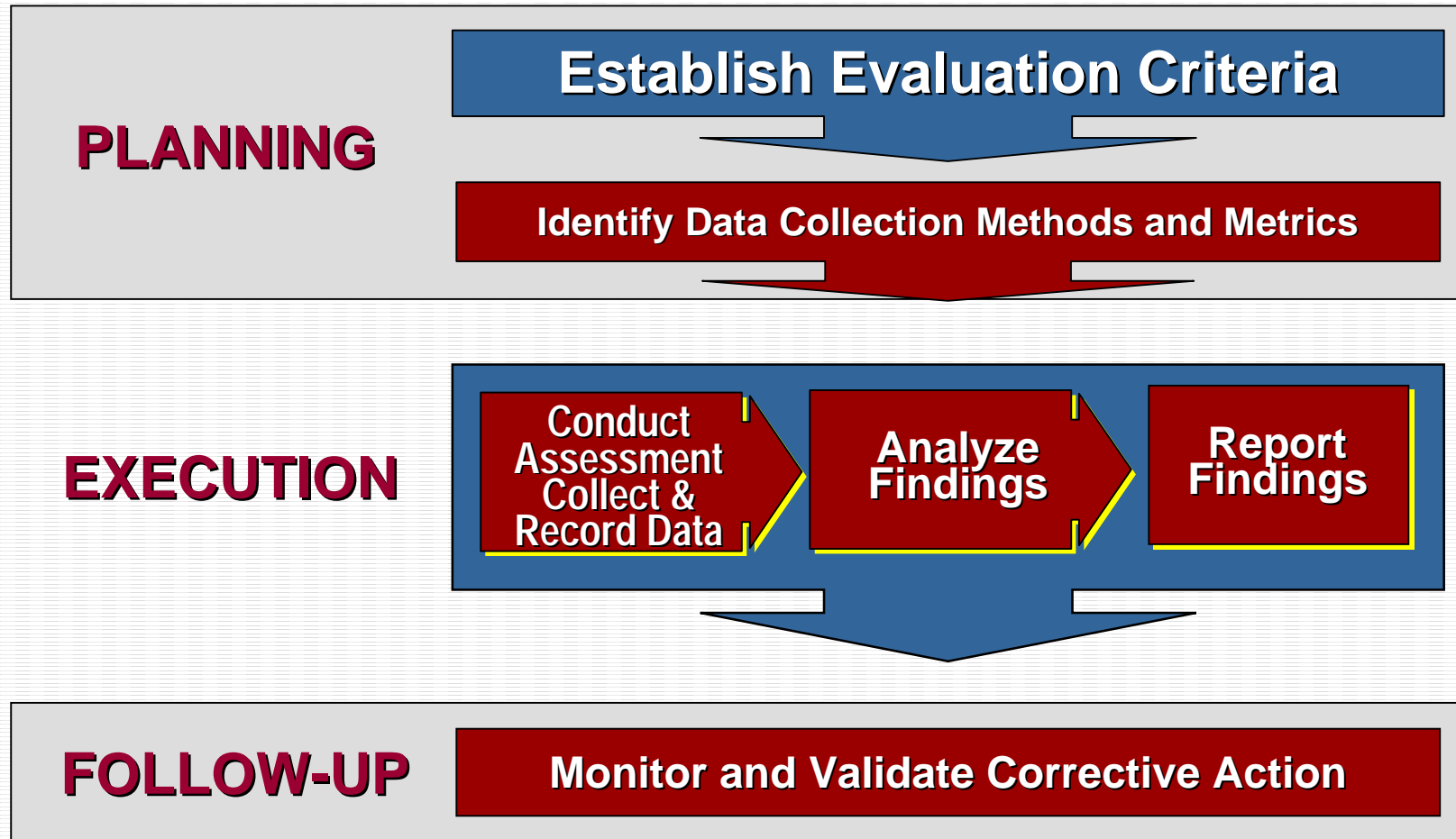


Aspects of Program

- Based on recognized standards and regulations
 - CERCLA
 - ISO 9000
 - Mil-Std-1916
 - Others
- Modular, logical, easily understood and measurable
- Can be tailored/modified/customized for situational conditions
- Provides methods for the capture and collection of quantifiable objective evidence
- Traceable, verifiable and accountable
- Require a specific skill mix



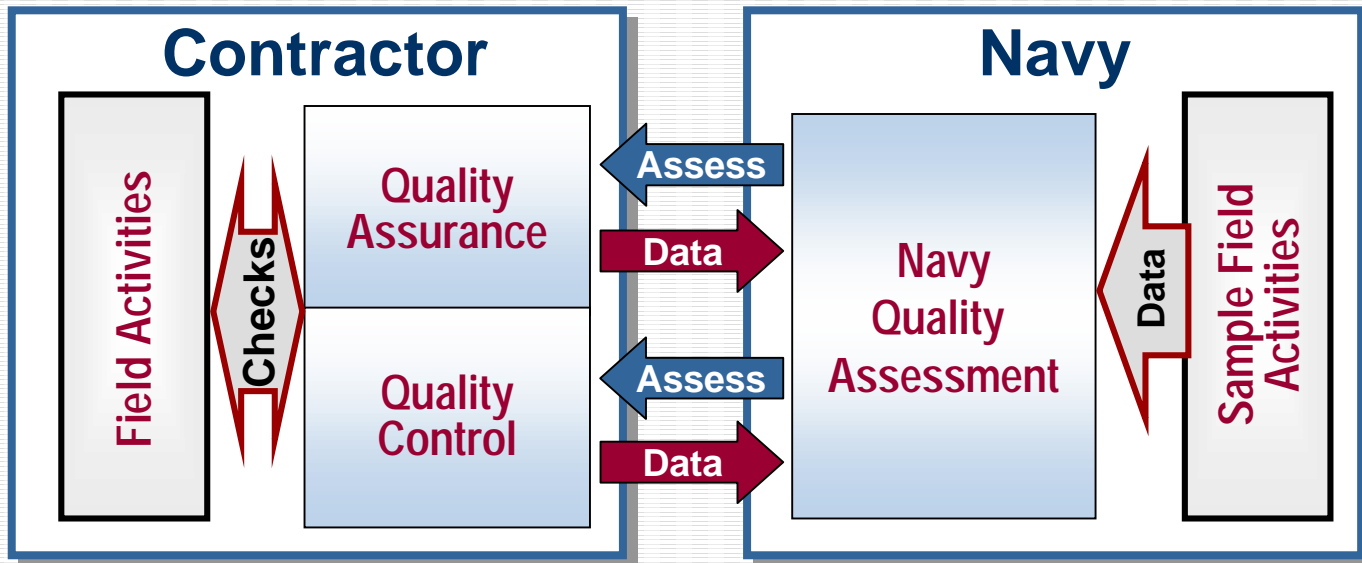
Basic Quality Measurement Cycle



Planning: Program Supports UXO Cleanup Activities



Execution: Team & Responsibilities



- **NAVY Quality Assessment:** Planned systematic independent activities executed to provide confidence of compliance to stated objectives and requirements
- **Quality Assurance:** All the planned and systematic activities implemented within the quality system needed to provide adequate confidence that an entity will fulfill its requirements for quality
- **Quality Control:** The operational techniques and activities used to fulfill requirements for quality

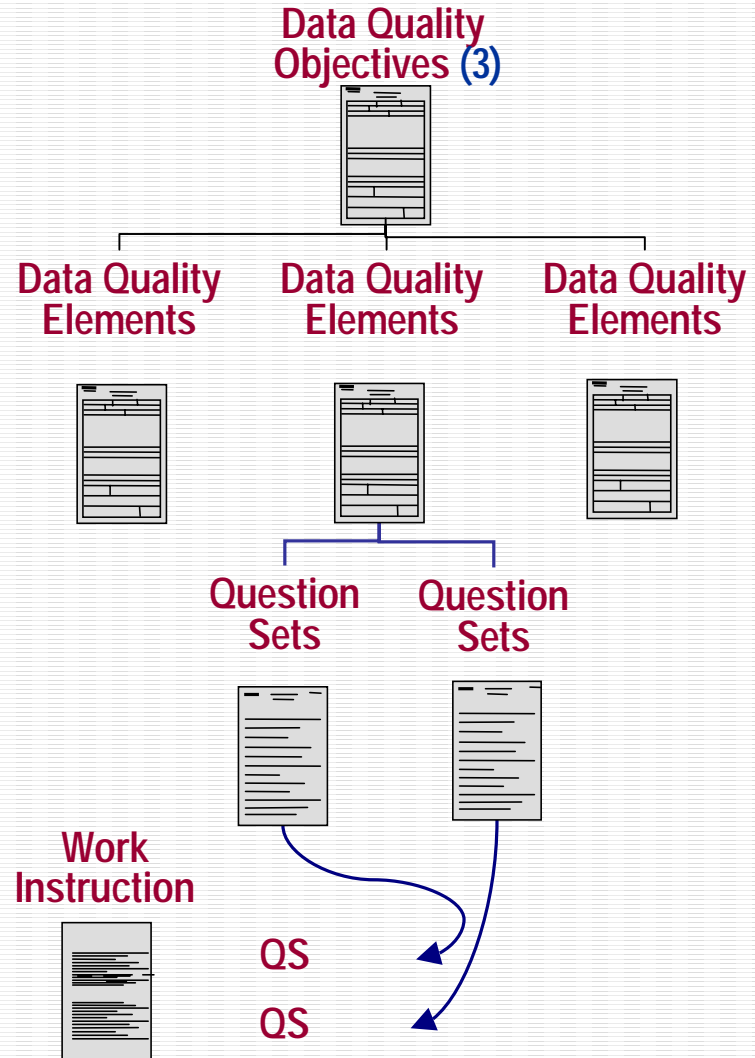
Program "Decision Tree"

Data Quality Objectives (DQO)

Data Quality Elements (DQE)

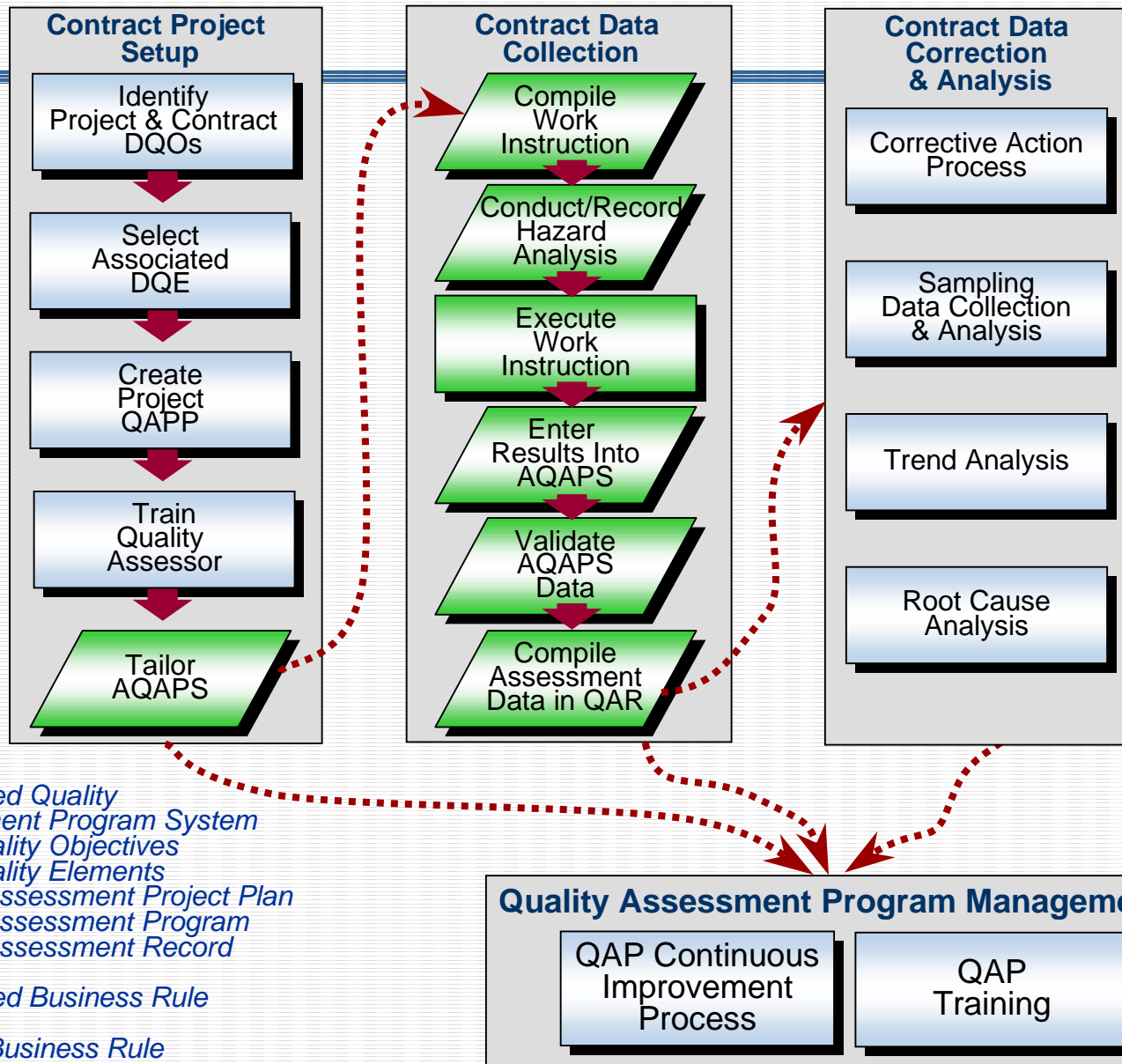
Question Sets (QS)

Work Instruction (WI)



Navy UXO Quality Assessment Program

Business Rules



Tomorrow Overview

- Fully develop UXO QA elements for all facets of UXO activities
- Expand to include all phases of CERCLA including Closeout
- Integrate into UXO Remediation contracting process
- Enable NAVFAC/Navy to rollout
 - Automated UXO Quality Assessment Process
 - RPM & ROICC Training
 - Contractor Guide
 - Implementation on Navy UXO contracts
- Make available to contractors for their use



OE Desk Guide

Purpose:

- To provide a baseline of information to construction project managers, environmental/remedial project managers, construction inspectors, and others required to manage ordnance projects at active and closing naval facilities

Intent:

- To provide standard contract language, references, resources, and assistance for developing scopes of work and cost estimates, for reviewing ordnance work documents and overseeing ordnance fieldwork

OE Desk Guide (cont.)

Ordnance Skills Hierarchy

- Outlines the required skill hierarchy appropriate to those individuals performing UXO remediation
 - UXO Sweep Personnel
 - UXO Technician I
 - UXO Technician II
 - UXO Technician III
 - Senior UXO Supervisor
 - UXO Quality Control Specialist
 - UXO Safety Officer

OE Desk Guide (cont.)

Regulatory Requirements

- CERCLA
- NCP
- NAVSEA OP 5 (Ammunition and Explosives Ashore Safety Regulations For Handling)
- DDESB 6055.9, Chapter 12 (Removal Depth for Real Property Contaminated with Ammunition, Explosives, or Chemical Agents)

CECOS Training

- Definition and description of UXO/OE
 - Safety and environmental hazards associated with UXO/OE
 - Regulations
 - Integration of UXO/OE cleanup and environmental cleanup
 - Site characterization
 - Risk assessment
 - Response selection
 - UXO technologies
- and
- Site closeout

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Summary

- Become familiar with the Regulatory Roles
- Keep current on technology and techniques
- If you have questions, contact your UXO POC
- Visit the UXO Workgroup Web Pages
- Make all pertinent decisions **WITH** your stakeholders
- Plan on good Government QA
- Don't reinvent the wheel!
 - Use standard contract language, QA, etc.

References

- 10 USC 172, Ammunition Storage Board
- NAVSEA OP 5
- NAVFACINST 11010.44
- DoD Directive 6055.9, DoD Explosives Safety Board (DDESB) and DoD Component Explosive Safety Board Responsibilities, July 19, 1996
- DoD Explosives Safety Board, Decision Memorandum, Subj: 315th Board Meeting, January 21, 1998
- DoDI 6055.14, Unexploded Ordnance (MILITARY MUNITIONS, INCLUDING UXO) Safety on Ranges, January 23, 1998

References (cont.)

- DoD 6055.9-STD, DoD Ammunition and Explosives Safety, August 11, 1997 establishes uniform safety requirements applicable to ammunition and explosives and to associated and unrelated personnel and property exposed to the potential damaging effects of an accident involving ammunition and explosives during their development, manufacturing, testing, transportation, handling, storage, utilization, maintenance, demilitarization, and disposal.

References (cont.)

- OPNAVINST 8020.14
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. section 9601 et seq.)
- ISO 9000
- Mil-Std-1916
- The Department of Defense and the United States Environmental Protection Agency, Unexploded Ordnance (UXO) Management Principles, March 7, 2000

References (cont.)

- Office of the Undersecretary of Defense Memorandum, Interim Policy on Land Use Controls Associated with Environmental Restoration Activities, August 31, 2000
- Department of the Navy Chief of Naval Operations Memorandum, Department of the Navy Environmental Policy Memorandum 99-02; Land Use Controls, May 25, 1999
- Draft Underwater OE/UXO Policy Document, dated 1 Nov 00 (Update when published)
- UXO Skills Hierarchy

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UXO Working Group Points of Contact

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